

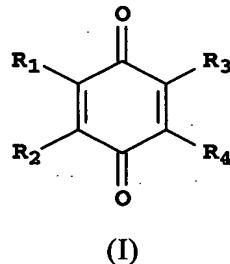
CLAIMS:

1. A silver-free, black-and-white thermographic material comprising a support having thereon at least one imaging layer comprising predominantly a hydrophilic or water-dispersible polymeric latex binder, and 5 further comprising:

- a) a color developing agent precursor that releases a color developing agent when heated to a temperature of at least 80°C, and
- b) a cyan dye-forming color coupler that is capable of reacting with said released color developing agent to produce a cyan dye,
- c) a magenta dye-forming color coupler that is capable of reacting with said released color developing agent to produce a magenta dye,
- d) a yellow dye-forming color coupler that is capable of reacting with said released color developing agent to produce a yellow dye, and
- e) an oxidizing agent that is a benzoquinone that is capable of 10 oxidizing the released color developing agent,

15 said material being substantially free of silver metal or reducible silver ions.

2. The material of claim 1 wherein said oxidizing agent is 20 represented by the following Structure I:



25 wherein R₁, R₂, R₃, and R₄ are independently hydrogen, or electron accepting or electron withdrawing groups.

3. The material of claim 2 wherein R₁, R₂, R₃, and R₄ are independently hydrogen, substituted or unsubstituted alkyl groups, substituted or

unsubstituted aryl groups, substituted or unsubstituted cycloalkyl groups, substituted or unsubstituted alkoxy or aryloxy groups, cyano, halo, sulfo, sulfonamido, carbonamido, or carboxy groups, or either R₁ and R₂ or R₃ and R₄ can be combined to form a carbocyclic or heterocyclic ring.

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4. The material of claim 3 wherein R₁, R₂, R₃, and R₄ are independently hydrogen, substituted or unsubstituted alkyl groups having 1 to 4 carbon atoms, substituted or unsubstituted cyclohexyl groups, substituted or unsubstituted phenyl groups, or halo groups.

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5. The material of claim 1 wherein said oxidizing agent is benzoquinone, tetrachloro-1,4-benzoquinone, 2,6-dimethoxy-1,4-benzoquinone, or 2,3,5-trichloro-6-pentadecyl-1,4-benzoquinone.

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6. The material of claim 1 wherein said oxidizing agent is present in an amount of from about 0.5 to about 20 mol/mol of color developing agent precursor.

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7. The material of claim 1 wherein said color developing agent precursor releases a *p*-phenylenediamine color developing agent upon heating to a temperature of at least 80°C.

8. The material of claim 1 wherein said color developing agent precursor is present in an amount of from about 0.0001 to about 0.1 mol/m².

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9. The material of claim 1 wherein said cyan dye-forming color coupler, said magenta dye-forming color coupler, and said yellow dye-forming color coupler are independently present in an amount of from about 0.01 to about 1 mol/mol of color developing agent precursor.

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10. The material of claim 1 wherein said binder is a hydrophilic binder is gelatin, a gelatin derivative, a cellulosic material, or a poly(vinyl alcohol).

5 11. The material of claim 1 that is duplitized, having one or more of the same or different imaging layers on both sides of said support.

12. The material of claim 1 further comprising a protective layer over said one or more imaging layers.

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13. A silver-free, black-and-white, non-photosensitive thermographic material that comprises a transparent polymer support having on only one side thereof one or more thermally sensitive imaging layers and an outermost non-thermally sensitive protective layer over said one or more thermally sensitive imaging layers,

said one or more thermally sensitive imaging layers comprising predominantly one or more hydrophilic binders, and in reactive association, imaging chemistry consisting essentially of:

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a) a color developing agent precursor that releases a *p*-phenylenediamine color developing agent when heated to a temperature of at least 80°C, said color developing agent precursor being present in an amount of from about 0.001 to about 0.05 mol/m²,

b) a cyan dye-forming color coupler that is capable of reacting with said released color developing agent to produce a cyan dye,

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c) a magenta dye-forming color coupler that is capable of reacting with said released color developing agent to produce a yellow dye,

d) a yellow dye-forming color coupler that is capable of reacting with said released color developing agent to produce a yellow dye, and

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e) an oxidizing agent that is benzoquinone, tetrachloro-1,4-benzoquinone, 2,6-dimethoxy-1,4-benzoquinone, or 2,3,5-trichloro-6-pentadecyl-1,4-benzoquinone, and is present in an amount of from about 1 to about 10 mol/mol of said color developing agent precursor,

5 said material being substantially free of silver metal or reducible silver ions, and said cyan dye-forming color coupler, magenta dye-forming color coupler, and yellow dye-forming color coupler being independently present in an amount from about 0.05 to about 0.5 mol/mol of said color developing agent precursor.

14. The material of claim 13 wherein said hydrophilic binder is gelatin or a derivative thereof, a cellulosic material, or a poly(vinyl alcohol).

10 15. A method comprising imaging the thermographic material of claim 1 with a thermal imaging source to provide a visible image.

15 16. A method comprising imaging the thermographic material of claim 14 with a thermal imaging source to provide a visible image.

17. The method of claim 15 wherein said imaging is carried out using a thermal print head or a laser.

20 18. The method of claim 15 further comprising using said imaged thermographic material for medical diagnostic purposes.